

WHAT IS CLAIMED IS:

1                   1. A digital broadcasting receiving apparatus for receiving a broadcasting  
2 signal, comprising:

3                   a tuner unit configured to extract a signal of a desired physical channel from  
4 an input signal;

5                   a first judging unit configured to judge whether or not the signal extracted by  
6 the tuner unit includes a digital broadcasting signal;

7                   a program information obtaining unit configured to extract the program  
8 information included in the digital broadcasting signal from the signal extracted by the tuner  
9 unit and processed by the first judging unit, if the program information included in the digital  
10 broadcasting signal can be extracted, when it is judged in the first judging unit that the signal  
11 extracted by the tuner unit includes the digital broadcasting signal; and

12                  a memory unit configured to store a judgment result in the first judging unit  
13 and the program information of the digital broadcasting signal obtained by the program  
14 information obtaining unit.

1                  2. The digital broadcasting receiving apparatus as set forth in Claim 1,  
2 further comprising a second judging unit configured to judge whether or not program  
3 information included in the digital broadcasting signal can be extracted, when it is judged in  
4 the first judging unit that the signal extracted by the tuner unit includes the digital  
5 broadcasting signal.

1                  3. The digital broadcasting receiving apparatus as set forth in Claim 2,  
2 wherein the program information obtaining unit extracts the program information included in  
3 the digital broadcasting signal and the memory unit stores the program information of the  
4 digital broadcasting signal obtained by the program information obtaining unit, if it is judged  
5 in the second judging unit that the program information included in the digital broadcasting  
6 signal can be extracted.

1                  4. The digital broadcasting receiving apparatus as set forth in Claim 2,  
2 wherein the tuner unit is configured to extract signals of a plurality of physical channels  
3 which are classified into a first classification and a second classification:

4                   a physical channel being in the first classification if the signal of the physical  
5 channel is judged in the first judging unit to include a digital broadcasting signal and which is

6 judged in the second judging unit that the program information included in the digital  
7 broadcasting signal can be extracted therefrom;

8 a physical channel being in the second classification if the signal of the  
9 physical channel is judged in the first judging unit to include a digital broadcasting signal and  
10 which is judged in the second judging unit that the program information included in the  
11 digital broadcasting signal cannot be extracted therefrom; and

12 wherein the first and second classifications of physical channels are stored in  
13 the memory unit.

1 5. The digital broadcasting receiving apparatus as set forth in Claim 4,  
2 wherein the tuner unit is configured to extract signals of a plurality of physical  
3 channels which are classified into the first classification, the second classification, and a third  
4 classification,

5 wherein a physical channel is in the third classification if the signal of the  
6 physical channel is judged in the first judging unit not to include a digital broadcasting signal;  
7 and

8 wherein the third classification of physical channel is stored in the memory  
9 unit.

1 6. The digital broadcasting receiving apparatus as set forth in Claim 4,  
2 further comprising an output unit configured to output such a display signal that a channel  
3 which is stored in the memory unit and belongs to the first classification and a channel which  
4 is stored in the memory unit and belongs to the second classification are separately displayed  
5 on a display screen as channels which can be selected, respectively.

1 7. The digital broadcasting receiving apparatus as set forth in Claim 6,  
2 wherein the output unit comprises a television.

1 8. The digital broadcasting receiving apparatus as set forth in Claim 2,  
2 further comprising an error correction unit configured to carry out an error correction of the  
3 input signal, and wherein the second judging unit judges whether or not the program  
4 information included in the digital broadcasting signal can be extracted based on a bit error  
5 rate which is detected in the error correction unit.

1 9. The digital broadcasting receiving apparatus as set forth in Claim 8,  
2 wherein the second judging unit judges whether or not the program information included in

3 the digital broadcasting signal can be extracted based on a result of detecting the bit error rate  
4 a plurality of times in the error correction unit.

1 10. The digital broadcasting receiving apparatus as set forth in Claim 2,  
2 further comprising an error correction unit configured to carry out an error correction of the  
3 input signal, and wherein the second judging unit judges whether or not the program  
4 information included in the digital broadcasting signal can be extracted based on  
5 synchronization establishment of digital data which is outputted from the error correction  
6 unit.

1 11. The digital broadcasting receiving apparatus as set forth in Claim 2,  
2 wherein when a physical channel selected from the memory unit has a signal which was  
3 judged in the first judging unit to include the digital broadcasting signal and which was  
4 judged in the second judging unit to contain program information that could not be extracted,  
5 the program information obtaining unit is configured to newly obtain the program  
6 information which is included in the digital broadcasting signal.

1 12. The digital broadcasting receiving apparatus as set forth in Claim 11,  
2 wherein when the program information which is included in the digital broadcasting signal is  
3 newly detected, the program information obtained is stored in the memory unit.

1 13. The digital broadcasting receiving apparatus as set forth in Claim 2,  
2 further comprising a display device for displaying image information which is included in the  
3 signal of the physical channel that is extracted in the tuner unit, and information representing  
4 results judged in the first judging unit and the second judging unit.

1 14. The digital broadcasting receiving apparatus as set forth in Claim 1,  
2 wherein the program information obtaining unit is disposed downstream of the first judging  
3 in a signal processing path for the signal extracted by the tuner unit to extract the program  
4 information from the signal which has been processed by the first judging unit in the same  
5 signal processing path.

1 15. The digital broadcasting receiving apparatus as set forth in Claim 1,  
2 further comprising a demodulating unit configured to demodulate the signal extracted by the  
3 tuner unit from the input signal, and wherein the first judging unit judges that the input signal

4 includes the digital broadcasting signal when a predetermined synchronization signal is  
5 detected in the signal being demodulated in the demodulating unit.

1 16. The digital broadcasting receiving apparatus as set forth in Claim 15,  
2 wherein the predetermined synchronization signal is a segment synchronization signal which  
3 is detected by a segment synchronous detecting unit included in the demodulating unit, or a  
4 field synchronization signal which is detected by a field synchronous detecting unit included  
5 in the demodulating unit.

1 17. The digital broadcasting receiving apparatus as set forth in Claim 1,  
2 further comprising an amplifying unit configured to amplify the signal which is inputted, and  
3 wherein the first judging unit judges whether or not the digital broadcasting signal is included  
4 based on an AGC voltage in the amplifying unit.

1 18. The digital broadcasting receiving apparatus as set forth in Claim 1,  
2 wherein the program information which is included in the digital broadcasting signal includes  
3 any information of virtual channel number, modulation system, channel TS-ID, and program  
4 number.

1 19. A receiving apparatus for receiving a broadcasting signal comprising:  
2 a tuner unit configured to extract a signal of a desired frequency from a  
3 broadcasting signal which includes a plurality of frequencies and one or more programs at  
4 each of the plurality of frequencies;

5 a program information obtaining unit configured to obtain program  
6 information which identifies the program included in the signal that is extracted in the tuner  
7 unit; and

8 an output unit configured to output a signal representing channel information  
9 which can be selected for broadcasting,

10 wherein the channel information includes,

11 first information which represents that, without identifying the  
12 program included in the frequency extracted, the frequency is available, and

13 second information which represents that, by identifying the program  
14 included in the frequency on the basis of the program information obtained in the program  
15 information obtaining unit, the frequency is available, and

16 wherein the first information and the second information are information  
17 corresponding to different frequencies of the broadcasting signal, respectively.

1                   20. The receiving apparatus as set forth in Claim 19, wherein,  
2                   the first information comprises information which represents that the physical  
3                   channel is available, if the physical channel including a digital broadcasting signal can be  
4                   extracted in the tuner unit and the program information of the physical channel cannot be  
5                   obtained by the program information obtaining unit, and

6 the second information comprises information which represents that one or  
7 more programs included in the physical channel are available, if the physical channel  
8 including a digital broadcasting signal can be extracted in the tuner unit and the program  
9 information of the physical channel can be obtained by the program information obtaining  
10 unit.

1                   21. The receiving apparatus as set forth in Claim 19, further comprising a  
2 memory unit configured to store the channel information, wherein when a physical channel  
3 selected from the memory unit includes information representing that, without identifying the  
4 program included in the physical channel, the physical channel is available, the program  
5 information obtaining unit newly obtains the program information included in the physical  
6 channel, and the output unit outputs images of one or more programs included in the physical  
7 channel based on the program information obtained.

1                   22. A digital broadcasting receiving method in which channel information  
2 of a digital broadcasting is scanned by channel scan and stored, comprising:

3 selecting a physical channel from a signal received;

judging whether or not program information included in the digital  
broadcasting signal can be obtained, in case that it is judged that the digital broadcasting  
signal is included; and

1                   23. The digital broadcasting receiving method as set forth in Claim 22,  
2 further comprising:

3                   displaying that the physical channel includes the digital broadcasting signal,  
4 when it is judged that the selected physical channel includes the digital broadcasting signal  
5 but the program information included in the digital broadcasting signal cannot be obtained;  
6 and

7                   displaying channel information of the physical channel, when it is judged that  
8 the selected physical channel includes the digital broadcasting signal and the program  
9 information included in the digital broadcasting signal can be obtained.

1                   24. The digital broadcasting receiving method as set forth in Claim 22,  
2 further comprising, when a physical channel selected from the memory unit includes a signal  
3 which was judged to include the digital broadcasting signal but the digital broadcasting signal  
4 was judged to contain program information which could not be extracted:

5                   newly obtaining the program information of the physical channel,  
6                   storing in the memory unit the newly obtained program information of the  
7 channel; and

8                   outputting a program included in the physical channel, based on the newly  
9 obtained program information of the physical channel.

1                   25. A receiving circuit for receiving a digital broadcasting signal,  
2 comprising:  
3                   an input unit to which a signal of a selected physical channel is inputted;  
4                   a first judging unit configured to judge whether or not the signal which is  
5 inputted by the input unit includes the digital broadcasting signal;  
6                   a second judging unit configured to judge whether or not program information  
7 included in the digital broadcasting signal can be extracted, when it is judged in the first  
8 judging unit that the inputted signal includes the digital broadcasting signal;  
9                   a program information obtaining unit configured to extract program  
10 information included in the inputted digital broadcasting signal; and  
11                   a memory unit configured to store a judgment result in the first judging unit,  
12 and to store the program information of the digital broadcasting signal which is obtained by  
13 the program information obtaining unit if it is judged in the second judging unit that the  
14 program information which is included in the digital broadcasting signal can be extracted.

1                   26. A digital broadcasting receiving method in which channel information  
2 of a digital broadcasting is scanned by channel scan, comprising:  
3                   scanning a signal to preset one or more physical channels;  
4                   displaying that a physical channel includes a digital broadcasting signal if the  
5 physical channel includes a digital broadcasting signal but the program information included  
6 in the digital broadcasting signal cannot be obtained; and  
7                   displaying channel information of a physical channel, if the physical channel  
8 includes a digital broadcasting signal and the program information included in the digital  
9 broadcasting signal can be obtained.